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27 February 2001
C6-BRC-T-01-007

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013



Attention: John Geroch

Subject: **WORKPLAN FOR DESTRUCTION OF ONE WATER SUPPLY
WELL FOR BOEING REALTY CORPORATION, FORMER C-6
FACILITY, 19503 SOUTH NORMANDIE AVENUE, LOS ANGELES,
CA**

Dear Mr. Geroch:

Please find enclosed for your review, a copy of the subject document prepared by
Richard C. Slade & Associates LLC for Boeing Realty Corporation.

If you have any questions concerning this document, please contact the undersigned
at 562-593-8623.

Sincerely,

A handwritten signature in black ink, appearing to read 'Stephanie Sibbett' with a stylized flourish at the end.

Stephanie Sibbett
Boeing Realty Corporation

Cc: Mario Stavale, Boeing Realty Corporation
Scott Lattimore, Long Beach Division

enclosure



RICHARD C. SLADE & ASSOCIATES LLC

CONSULTING GROUNDWATER GEOLOGISTS

**WORKPLAN FOR DESTRUCTION
OF ONE WATER-SUPPLY WELL
at the
BOEING REALTY CORPORATION
FORMER C-6 FACILITY
19503 SOUTH NORMANDIE AVENUE
LOS ANGELES, CALIFORNIA**


Prepared for:

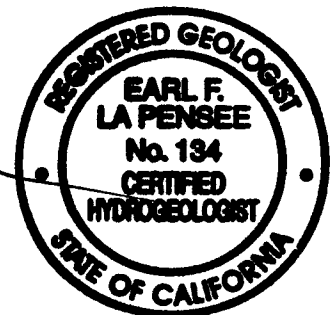
**The Boeing Realty Corporation
Long Beach, California**

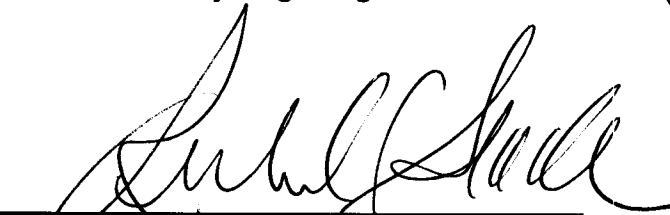
by:

**Richard C. Slade & Associates LLC
Consulting Groundwater Geologists
North Hollywood, California**

**RCS Job No. S2057
February 2001**


**Earl F. LaPensee
Certified Hydrogeologist No. 134**




**Richard C. Slade
Certified Engineering Geologist No. 929**

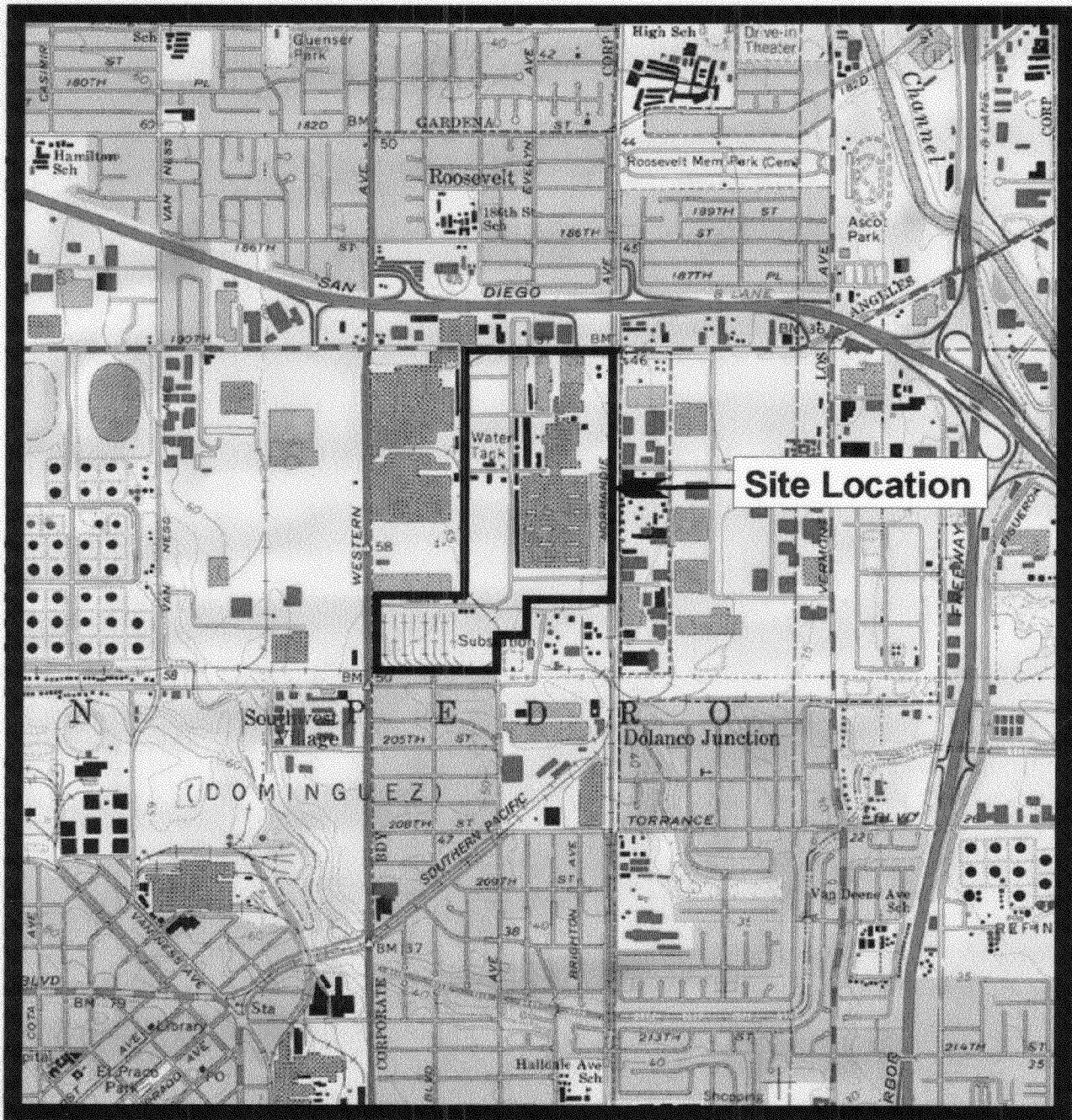


INTRODUCTION

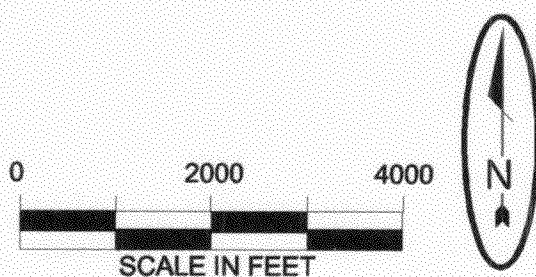
The purpose of this Workplan is to outline proposed procedures and methods to destroy one existing water-supply well at the Boeing Realty Corporation (BRC) Former C-6 Facility. This former aircraft manufacturing facility was located at 19503 South Normandie Avenue, in the City of Los Angeles, California. Currently, the facility is in process of being demolished. Figure 1 -Site Location Map- illustrates the general location of the former aircraft manufacturing facility. Figure 2 -Well Location Map- illustrates the location of the water-supply well to be destroyed for this project (Well No. 1) and the locations, as recently determined using Global Positioning System equipment, of the two other onsite wells (Nos. 2 and 3) that were permanently destroyed in 1998.

All destruction procedures for Well No. 1 will be conducted in accordance with current California Department of Water Resources (DWR) guidelines and local Los Angeles County Guidelines, if applicable. Prior to destruction, a Los Angeles County Department of Health Services (LACDHS) Well Destruction Permit will be obtained.

Beylik Drilling Company (Beylik) of La Habra, California is the subcontractor that has been selected to perform the actual well destruction work. Richard C. Slade & Associates, LLC, Consulting Groundwater Geologists (RCS), will be present to monitor and observe the well destruction work at certain tasks as herein specified. RCS personnel will also maintain liaison with Beylik personnel during the work task to monitor the progress of well destruction work. Kennedy Jenks Consultants (KJC) will also be generally involved with the work and is the overall administrator of the project.



Base Map: USGS 7.5-minute Torrance Topographic Quadrangle

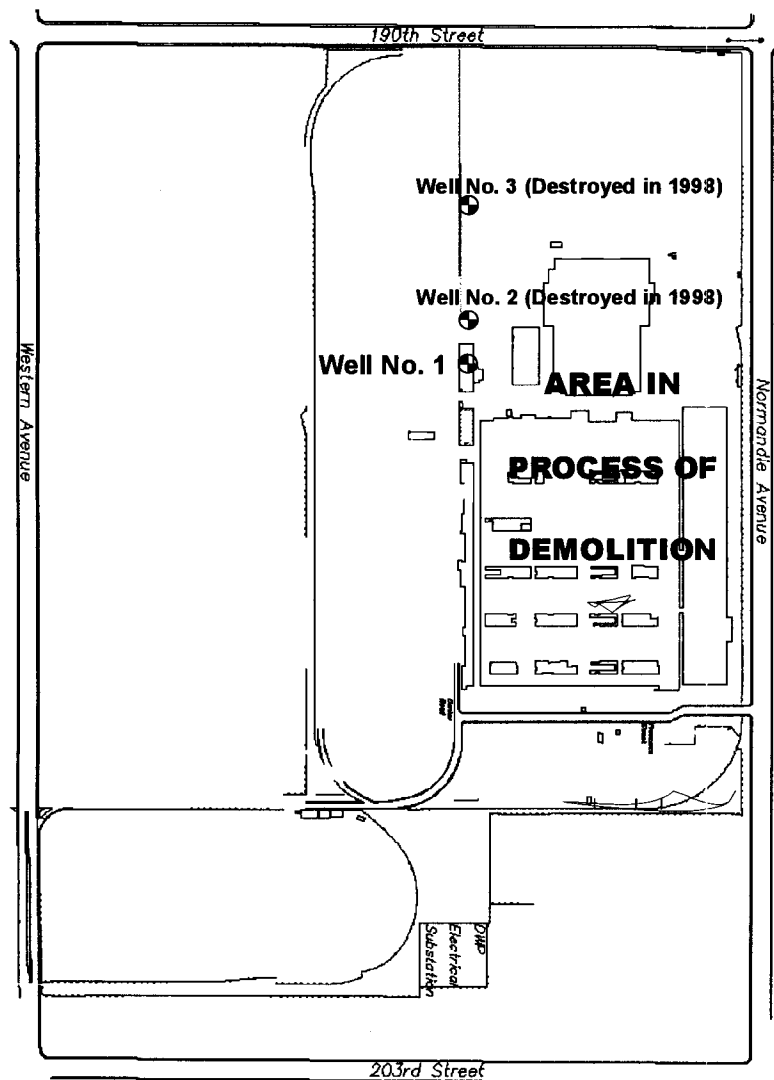


RICHARD C. SLADE & ASSOCIATES LLC
CONSULTING GROUNDWATER GEOLOGISTS

FIGURE 1
SITE LOCATION MAP
BOEING REALTY COMPANY C
FORMER C-6 FACILITY

RCS JOB NO. S2057

FEBRUARY 2001



NOTE: Well Locations shown were determined
using Global Positioning System Methods



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FIGURE 2
WELL LOCATION MAP
BOEING REALTY COMPANY
FORMER C-6 FACILITY

RCS JOB NO. S2057

FEBRUARY 2001



BACKGROUND INFORMATION

Available information reveals that initially three water-supply wells, Nos. 1 through 3, were constructed at the subject site as shown on Figure 2. According to Los Angeles County Department of Public Works, Flood Control District (LACFCD) data, the three wells are/were designated as follows:

Owner Well Number	LACFCD Number	U.S. Geological Survey Number	California Department of Water Resources Number
1	794A	T4S/R14W-1H1	T4S/R14W-1F1
2 (destroyed 1998)	794B	T4S/R14W-1H2	T4S/R14W-1F2
3 (destroyed 1998)	794C	T4S/R14W-1H3	T4S/R14W-1F3

Well Nos. 2 and 3 were destroyed in June and July 1998. RCS personnel were present to oversee and monitor the destruction of those two wells. Beylik personnel performed the actual destruction work on the two wells.

Original drillers' logs reveal that Well No. 1 was drilled for the Aluminum Corporation of America (ALCOA) in September 1942. The water well drilling contractor was the Roscoe Moss Company of Los Angeles. Driller's log information reveals this well was drilled using cable tool methods.

The following table shows the construction parameters of the well at the site, as documented in the original drillers' log for Well No. 1.



Total Casing Depth (ft, bgs)	Diameter of Casing (inches)	Perforation Interval (ft, bgs)
600	14 (10 gauge)	473 to 514

The perforations in the well are reported to be 5/16 inches in width. The orientation of the slots is horizontal, because the driller's log documents that a hydraulic perforator was utilized to cut the perforations into the well casing. A copy of the driller's log for Well No. 1 is presented in Appendix I of this Workplan.

Well No. 1 was recently uncovered during demolition of Building 20 at the facility. During a field visit to the site by RCS personnel on December 12, 2000, it was observed that the 14-inch diameter casing for Well No. 1 appeared to be open from the ground surface down to at least the static water level of approximately 50 feet bgs. It is our understanding that Kennedy/Jenks personnel have since sounded the well to a depth of 560 feet bgs. Therefore we have assumed that the well is open and free of other obstructions that might affect the ability to complete the well destruction. This will be confirmed during the video survey of the well.

WELL DESTRUCTION PROCEDURES

Water Flocculation

This task will be performed prior to a video survey of the well. The flocculant will be used to remove/settle any suspended material from the water column within the well in preparation for the video surveying.



The flocculant to be used will consist of Barofos brand flocculant. Approximately one pound of this material will be applied to the well. Following application of the Barofos, approximately 50 gallons of water will be poured directly down the well. The water in the well will be allowed to settle for at least one day before any additional work is performed within the casing.

Well Video Survey

A color video survey will be conducted in the well. This video survey will consist of utilizing a combination vertical/side-viewing color camera to examine and record, on VHS tape, the field of view of the blank and perforated casing during a vertical survey in the well. The side-viewing option will be used to examine, at appropriate points and where necessary, the physical condition of the well casing, joints, and perforations, if possible.

An onsite geologist will be present to direct the video survey, observe/examine the casing, and manually record those observations. Observations regarding the well to be recorded by the onsite geologist will include but will not necessarily be limited to the following items:

- ◆ Depth to water surface
- ◆ Depth and condition of casing joints.
- ◆ Physical condition of blank and perforated casing.
- ◆ Nature and extent of any encrustation/corrosion/biofouling.
- ◆ Depth interval of perforations; type of perforations.
- ◆ Obstructions in the well (if any).
- ◆ Presence of foreign debris in the well (if any).
- ◆ Amount of sediment fill in casing.

Following completion of the video survey, two copies of the video log will be obtained from the contractor. Two copies of the video survey log will be submitted to BRC (or its representative KJC).



Bail Sediment Fill

Following the video survey, sediment fill in the bottom of the well will be removed by bailing. Bailing will consist of lowering to the bottom of the well a metal bailer that has an adequate diameter (at least 10 inches in diameter) and that is equipped with a single bottom end flap to capture and lift the sediment fill into the bailer.

After the bailer has been lowered to the bottom of the well, the bailer will be repeatedly lowered and raised in short increments to move sediment up into the bailer. The bailer will then be brought to the surface and the contents placed into a watertight container.

The bailing process will be repeated until the majority of sediment fill is removed from the bottom of the well. A geologist will be present onsite to examine and record the amount the sediment removed from the bottom of the well. A sample of the bottom sediment will be collected and submitted to the laboratory for analysis of volatile organic compounds (VOCs) and metals including hexavalent chromium. All bailed sediment fill will be stored in 55-gallon drums or other suitable containers. Based on the analytical results, the sediment will be used onsite or disposed of in accordance with Section 2 of the Site-Wide Soil and Waste Management Plan (SWMP) dated October, 2000. Sample forms from the SWMP are included in Appendix 2.

If any obstruction(s) and/or foreign debris (pieces of metal or wood, for example) are noted in the video survey to occur within the well, an attempt to remove the obstruction(s) and/or debris will be performed by the contractor using the bailer if deemed feasible. However, if it is found that other methods will need to be used to remove the obstructions, then BRC and/or KJC personnel will be contacted and notified of the situation.



The method of removal of a possible obstruction will depend on the type and character of the obstruction and will be determined prior to removal. If it is found that removal of the obstruction cannot be performed, then the well will be destroyed with the obstruction in place.

Casing Perforation

The well casing will be perforated with a down-well mechanical perforator. Placement of perforations is proposed within the blank casing between the depths of 50 ft and 473 ft bgs. It is estimated at this time that approximately 390 ft of perforations will be placed in this interval; the actual depths of these intervals will be determined following viewing of the video survey. The mechanical perforator tool to be used to cut the new perforations will be a Mills knife perforator. Placement of perforations will be arranged per row with one row every vertical foot of casing and each row will have a minimum of 8 cuts. Perforations will be placed at the following depth intervals: a) 10 to 150 ft bgs; b) 210 to 290 ft bgs; c) 292 to 458 ft bgs, and d) 466 to 470 ft bgs unless the video survey results suggest modifications are appropriate.

Well Sealing

After the new perforations have been cut into the existing casing, the well will be permanently sealed. The well sealing material shall consist of neat cement. The cement used for the seal shall be a standard brand Portland cement conforming to ASTM C150, Type II. There shall be not more than two parts by weight of sand to one part by weight of cement. The water-cement ratio shall be on the order of 5 to 6 gallons of water per sack of cement (94 pounds).

Well sealing shall be conducted in two stages. The first stage of well sealing will consist of filling the well from its total depth of the well up to a depth of approximately 150 ft bgs. Neat cement grout shall be injected into the well, from bottom up to a depth of 150 ft bgs by means of a temporary tremie pipe. The cement grout shall be placed by a positive displacement method using a pump and pumping through the tremie pipe. The temporary tremie pipe shall



extend from the surface to the bottom of the zone to be grouted. The cement shall be placed, from bottom to top, in a continuous operation. The temporary tremie pipe shall be slowly raised inside the well casing as the cement grout is placed, but the discharge end of the temporary tremie pipe must be submerged in the cement grout at all times until the process is completed. The cement grout tremie pipe shall be maintained full, to the surface, at all times until completion of grouting of this lower section of the well. The cement grout will be allowed to set for a period of approximately 24 hours, before the next stage of well sealing is performed. The level of the cement will be sounded following the 24-hour set-up period.

The second stage of well sealing shall consist of pressure grouting the well from a depth of 150 ft up to 10 ft bgs. Pressure grouting will be conducted by installing a temporary inflatable packer at a depth of approximately 10 ft and injecting neat cement grout via a tremie pipe below the packer. The cement grout will be injected at pressures ranging between 15 to 40 pounds per square inch (psi).

Water displaced by the grouting process will be captured and stored in an onsite temporary storage tank. A sample of this water will be collected and analyzed for volatile organic compounds (VOCs) to determine appropriate discharge requirements. Based on the analytical results, Boeing's Long Beach Division will appropriately dispose of the water in accordance with the SWMP (October 2000).

Following the second stage of well sealing, no further work shall be performed in the well for a minimum of 24 hours in order to allow the upper cement seal to set. The level of the cement will be sounded following the 24-hour set-up period.

The Contractor shall keep a record of the volume of cement grout used to fill the casing of the well, up to a depth of approximately 150 ft, and also the volume of cement grout installed via pressure grouting from 150 ft up to a depth of approximately 10 ft bgs. The grout volume shall



not be less than the calculated volume of the entire length of the known 14-inch diameter casing to be filled and pressure grouted.

Installation of Mushroom Cap

Following pressure grouting of the well, the area around the top of the well casing will be excavated to a depth of approximately 5 ft bgs. Following excavation, the uppermost 5 ft of well casing will be removed and any remaining casing volume requiring grout will be filled in and allowed to "mushroom" by overfilling the top of the casing. This mushroom cap will be allowed to fill the excavation to a minimum height (depth) of one-foot above the top of the well casing. The mushroom cap will be allowed to set for a minimum period of 24 hours.

Backfilling

After the mushroom cap has been allowed to set for the minimum 24-hour time period, the excavated hole will be backfilled. This backfill will consist of native soil material. The backfill will then be compacted to 90% of its original compaction.

Report

Following completion of all destruction work, a report will be prepared and submitted to BRC summarizing the destruction operations conducted on Well No. 1. This report will document in detail the field destruction operations performed, and shall include the following:

- ◆ A video survey report documenting down well conditions.
- ◆ The amount and disposition of water and sediment removed from the well.
- ◆ Information on perforation depth intervals.
- ◆ Volume of cement placed in the well.
- ◆ A schematic cross-sectional diagram illustrating well destruction.



Also to be included will be all attendant documents such as the well destruction permit, field groundwater parameters, laboratory analytical results performed on sediment samples, cement delivery tickets, photographs of representative destruction activities, and manifest or landfill tickets for sediment disposal if necessary.

Site Safety

All work performed by RCS personnel, while onsite, will be conducted in accordance with the Site Safety Plan, which is presented in Appendix 3. Work conducted by Beylik personnel will be performed in accordance with their Corporate Safety Procedures. A copy of these procedures is available on request.



APPENDIX 1
COPY OF DRILLERS' LOG

ROSCOE MOSS COMPANY

WELL CONTRACTOR W. I. [illegible] RENTAL TOOLS
 Eng at Well No. 21 owned by Aluminum Co. of America.
Torrance, Calif.
 Exact Location Plant 1905th and Normandie St. Torrance, Calif.
 Started Work Sept. 15, 1942
 Completed Work October 3, 1942

Type or Extension used Hydraulic
Endorser's 514 R. N. 473 R. N. H Date rec'd 5/26

Diameter of Test-tube _____ Inches
Length of Test-tube _____ "
Depth at which water was first found 68 "
Standing level before jacking 69 to 80 "
Standing level after jacking 83 "
Note below your observations at any distance in water level while jacking.

Water level when Test started Test 83 ft. 2
 Draw down from standing level " "
 No. of gallons per minute pumped when Test started "
 No. of gallons per minute pumped when Test completed 615
 Draw down at completion of Test 33 ft. 2

Location: Station 200 of water gravel.		
0 ft.	154	Sandy clay--soft streaks
154	182	Fine sand
182	210	Blue sand and clay
210	290	Blue clay
290	292	Sand and gravel to 3/4"
292	420	Blue sandy clay
420	456	Clay
456	466	Fine to coarse sand.
466	470	Blue clay
470	480	Sand to 1 1/2" gravel.
480	490	Clay, sand and gravel.
490	502	Sand, gravel to 3"
502	512	Sand to 3/4" gravel.
512	536	Sandy clay, some gravel.
536	600	Fine sand and clay.

154	182	Fine sand
182	210	Blue sand and clay
210	290	Blue clay
290	292	Sand and gravel to 3/4"
292	420	Blue sandy clay
420	458	Clay
458	466	Fine to coarse sand
466	470	Blue clay
470	480	Sand to 1 1/2" gravel
480	490	Clay, sand and gravel
490	502	Sand, gravel to 3"
502	512	Sand to 3/4" gravel
512	536	Sandy clay, some gravel
536	600	Fine sand and clay

If reducing stages of boring were run in, state how cut

Depth from surface cut _____ ft.

Size of casing cut _____ in.

Top to larger casing _____ ft.

Was adapter or cement used?

If casing was changed or repaired, state depth, describe repairs. Make drawing of change of its position showing dimensions.

and condition in which casing was left and probable future effects.

Is well straight, top to bottom? **Practically.**

If not, what is the variation?

Will there be any detrimental effect on pump? **None.**

If so, what effect?

Give any additional data which may be of future value.

Driller must fill in report on work performed and report must be complete for his signature.

Date of report **October 14, 1942**

Type and size of tool **No. 23**

V. Peterson, Driller



APPENDIX 2 WASTE CONTAINER FORMS

WASTE CONTAINER REQUEST

FORMER C-6 FACILITY
TORRANCE, CALIFORNIA

CONTAINER TYPE

QUANTITY

- ☐ 55-gallon drums _____
- ☐ 8 yd³ roll-off bin _____
- ☐ 20 yd³ roll-off bin _____

☐ Hold for pickup

☐ Deliver to:

EIA No. _____

Bldg No. _____

Column No. _____

Other _____

REQUESTED BY:

Name _____

Title _____

Affiliation _____

Date _____

Signature _____

Fax or hand-deliver this request to:

Tel
Fax

WASTE CONTAINER CONTENTS LOG

FORMER C-6 FACILITY
TORRANCE, CALIFORNIA

CONTAINER NUMBER (S):				
CONTAINER TYPE 55-gallon drums <input type="checkbox"/> 8yd ³ roll-off bin <input type="checkbox"/> 20 yd ³ roll-off bin <input type="checkbox"/>				
GENERAL DESCRIPTION OF GENERATING PROCESS _____ _____ _____				
SPECIFIC SOURCES CONTRIBUTING WASTE TO THIS CONTAINER OR GROUP OF CONTAINERS				
EIA No.	BLDG No.	ET No.	BORING/WELL Nos	DATE ADDED
This log maintained by _____ (name) _____ (title) _____ (affiliation). Waste conatiners sealed on _____ (date) Signature _____ Date _____				



**APPENDIX 3
SITE SAFETY PLAN
WELL DESTRUCTION**



INTRODUCTION

This Site Safety Plan delineates the basic safety requirements for the destruction of an existing water-supply well (Well No. 1) at the Boeing Realty Corporation (BRC) C-6 Facility at 190th street and Normandie Avenue, Torrance California. This Site Safety Plan addresses expected potential hazards that may be encountered during the destruction of this water well at the facility as well as minimum worker protection requirements for RCS personnel, only.

SITE SAFETY PROTOCOL

The project geologist will also be responsible for implementing the provisions of a site safety plan designed for RCS personnel at this site. A field geologist will be designated to observe and monitor subcontractor work activities at the site and will serve as the site safety officer. The project geologist will be responsible for the dissemination of the information contained in this plan to other RCS personnel assigned to the project.

The water well destruction subcontractor on this project will have his own separate site safety measures/plans and will be responsible for implementation of those measures with his own personnel. The project geologist will review the site safety measures/plan of the destruction subcontractor chosen to perform the well destruction work.

The project geologist will be responsible for adequately addressing the following RCS items prior to work at the site:

- Safety supplies and equipment inventory.
- Safety and orientation meetings.
- Procedures for reporting accidents or incidents.

The project geologist will have the authority to suspend work anytime it is determined that the provisions of the site safety plan are inadequate for RCS worker safety.

Hazard Assessment

No particular airborne and/or other contaminants are expected to be encountered during well destruction activities at the site. However, minimum protective clothing will be mandatory for all RCS and subcontractor field personnel as specified in this site safety plan.



GENERAL PROJECT SAFETY REQUIREMENTS

The field geologist will monitor conditions to alert RCS field personnel to possible physical hazards. The subcontractor will have his own in-house safety protocol to also apprise and alert his personnel of potential work hazards. These hazards may include but not be limited to the following:

- Falling objects, such as tools or equipment.
- Falls from elevations.
- Tripping over hoses, pipe, tools, or equipment.
- Slipping on wet or oily surfaces.
- Insufficient or faulty protective equipment.
- Insufficient or faulty equipment or tools.

Protective Equipment Requirements

The field personnel and any visitors admitted to the general work area will be required to wear the following clothing and equipment, at a minimum, while in the work area at the project site:

- a. Hard hat.
- b. Safety glasses.
- c. Steel-toed boots.

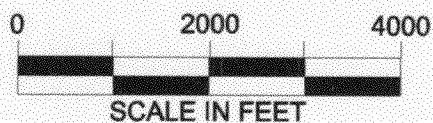
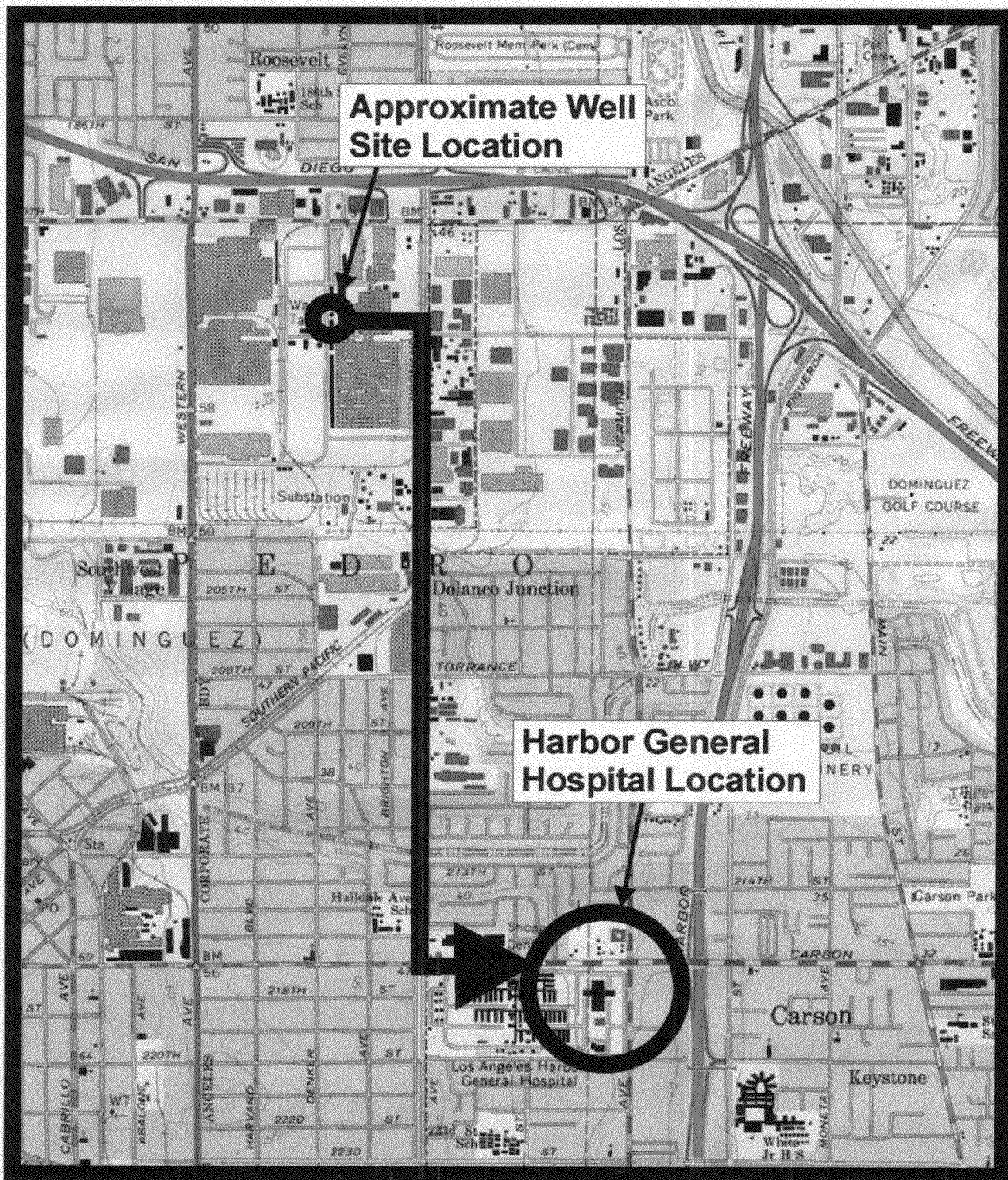
Field personnel engaged in work operations may be required to wear the following additional equipment at the direction of the field geologist:

- a. Standard Tyvek coveralls (when required).
- b. Gloves (Cloth).

Emergency Response Procedures

In the event of an accident resulting in serious physical injury, thereby requiring immediate emergency care, the appropriate local emergency response agency (through 911) will be notified. For other injuries not requiring immediate emergency care, minor first aid will be administered and the injured worker will be transported to the nearest hospital or emergency medical clinic for emergency treatment. The nearest hospital to the site is Harbor-UCLA Medical Center located approximately two (2) miles south of the facility, at the southeast corner of the intersection of Normandie Avenue and Carson Street. Figure 3 –Hospital Route Map- shows the preferred pathway from the site to that hospital.

In the event of fire and/or explosion local fire or other emergency response agencies (police, rescue) will be called and notified of the situation, if necessary. If property damage has occurred the requisite onsite Boeing personnel will also be notified. The identity of these personnel will be established prior to conducting any work on the site.



RICHARD C. SLADE & ASSOCIATES LLC
CONSULTING GROUNDWATER GEOLOGISTS

FIGURE 3
HOSPITAL ROUTE MAP
FROM BOEING C-6 FACILITY

RCS JOB NO. S2057

FEBRUARY 2001



Emergency Phone Numbers:

The following personnel are to be contacted in case of emergency during well destruction work at the site.

John Marasco, BRC Site Contact:	(562)-618-6305
Robert Logan, Kennedy Jenks Consultants:	(949) 261-1577
Brian Mossman, BRC Client Contact:	(818) 586-6015
Stephanie Sibbett, BRC Client Contact:	(562) 593-8623